Massachusetts Electric
A National Grid Company

Amy G. Rabinowitz
Counsel

March 16, 2004

Mary L. Cottrell, Secretary
Department of Telecommunications and Energy
One South Station
Boston, MA 02110

Re: D.T.E. 03-121

Dear Secretary Cottrell:

I am enclosing the direct testimony of Carlos A. Gavilondo in the above-captioned proceeding. Thank you very much for your time and attention to this matter.

Very truly yours,

Amy G Rabinowitz

Amy G. Rabinowitz

cc: Service List

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DIRECT TESTIMONY

OF

CARLOS A. GAVILONDO

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I. Introduction and Qualifications

Q. Please state your full name and business address.

A. Carlos A. Gavilondo, 55 Bearfoot Road, Northborough, Massachusetts 01532.

Q. Please state your position.

A. I am Vice President, Distribution Regulatory Services, for Massachusetts Electric Company and Nantucket Electric Company (together “Mass. Electric” or “the Company”). In that capacity, I am responsible for the Company’s distribution rates and regulatory support groups.

Q. Please describe your educational background and training?

A. I graduated from Tulane University in New Orleans, Louisiana, with a Bachelor of Science degree in Electrical Engineering in 1985. In 1993, I received my law degree from Tulane Law School.

Q. What is your professional background?

A. From 1985 to 1990, I worked for Westinghouse Electric Corporation, primarily as a design engineer and later as a product specialist, in the Power Generation Business Unit, located in Orlando, Florida. In 1993, following my graduation from law school, I worked for one year as a federal judicial law clerk in New Orleans. I then joined the law firm of Squire, Sanders and Dempsey, in Phoenix, Arizona, where I worked from 1994 to 1996 practicing environmental law. In May 1996, I joined the legal department of New England Electric System, the predecessor of National Grid USA, where I worked on a wide range of state and federal regulatory matters. In August 2001, I took the position of General Counsel for Silica Networks, S.A., a long-haul fiber optic telecommunication company based in Santiago, Chile, that was partly owned by a subsidiary of National Grid plc. As a result of National Grid's decision to exit the telecommunications business in Chile and Argentina, I moved back to Massachusetts in March of 2002, and assumed my present position in April 2002.

II. <u>Purpose of Testimony</u>

Q. What is the purpose of your testimony?

A. Boston Edison Company, Cambridge Electric Light Company, and Commonwealth Electric Company, d/b/a NSTAR Electric ("NSTAR Electric") initiated this proceeding by requesting approval for a standby service tariffs for distributed generation. In the January 20, 2004 Notice of Public Hearing and Procedural Conference in this case ("January 20 Notice"), the Department of Telecommunications and Energy (the "Department") identified four specific issues it intends to investigate with respect to the NSTAR Electric proposal; namely, whether: (1) the standby rates proposed by NSTAR Electric ensure that customers with their own on-site generation facilities pay an appropriate share of distribution system costs; (2) distribution companies should recover their costs through fixed or variable charges; (3) standby rates should reflect embedded and/or incremental costs; and (4) distribution companies should offer firm or non-firm standby service. At the public hearing held February 10, 2004, the Department invited parties wishing to put forth a direct case to do so by submitting pre-filed testimony. In my testimony, I discuss the NSTAR Electric proposal with respect to the issues identified in the Department's January 20 Notice. I also briefly describe the framework governing back-up service rates and service for Mass. Electric that was established in the Rate Plan Settlement approved by the Department in Docket D.T.E. 99-47 regarding the merger of Mass. Electric with the former Eastern Edison Company.

III. Issues Raised by the NSTAR Electric Proposal

Q. Please summarize the proposal filed by NSTAR Electric in this case.

A. On January 16, 2004, NSTAR Electric filed a proposal with the Department for the approval of standby service rates for large and medium-sized commercial and industrial customers that have on-site generation. The proposal is described in the pre-filed testimony of Mr. Henry LaMontagne, Director of Regulatory Policy and Rates for NSTAR Electric. As I understand the proposal, the standby service rate design is based on establishing a $/kW demand charge for each kW of firm standby service capacity requested, and setting a contract demand level for the requested amount of firm standby. The contract demand level would be based on the size of the customer's on-site generation. The standby service demand charge is set equal to the distribution demand charge in the generally applicable rate schedule for those rates that do not currently have a distribution energy (i.e., kWh) charge; and for those generally applicable rates that do have a distribution energy charge, the energy portion of the rate is converted to a demand charge in order to apply the contract demand element for firm standby service. Supplemental service would be provided if a customer were to take service over and above the contract demand level, and if the customer's generator is out of service, the metered supplemental service demand would be adjusted downward to avoid double collecting demand charges. NSTAR Electric proposes that the new standby tariffs apply only to customers that begin satisfying all or a portion of their load with on-site generation after the date of their filing, and that existing self-generating customers be "grandfathered."

Q. The Department's January 20 Notice in this docket identified four issues it intendeds to investigate. Could you please explain the Company's position on these issues?

A. Yes.

1. <u>Do the Proposed Standby Rates Provide for On-Site Generation Customers to Pay an Appropriate Share of Distribution System Costs?</u>

The standby service rates proposed by NSTAR Electric distinguish between cost responsibility for local (i.e., distribution) facilities and shared (i.e., transmission) facilities. To the extent an on-site generating customer wants firm, instantaneous back-up service when its on-site generation is down, the utility experiences same costs on its local distribution system to provide the back-up service as it experiences serving a non-generating customer. As Mr. LaMontagne explains, NSTAR Electric does not avoid any distribution costs because it must have the local facilities in place with sufficient capacity to serve the customer's peak load instantaneously, and cannot redeploy these physical assets to meet other needs. As I understand the NSTAR Electric proposal, an on-site generating customer would contribute an amount towards distribution costs which is comparable to what the customer would have paid for distribution if it had been an all-requirements customer.

It is critical to understand the nature of the service being provided by a distribution company to a firm standby service customer, and how the cost to the distribution company of providing that service compares to the cost of service provided to a non-generating customer. A standby service customer requesting instantaneous, firm back-up service from the distribution company imposes on the utility the obligation to have the necessary facilities standing by to serve the peak load at the customer's facility at any time. This obligation is the same one the utility bears in serving a non-generating customer. Indeed, the very name "standby" or "back-up" service denotes that the utility is being asked to do something – in this case it is to standby and be ready to serve the customer's load at any time, including at times of peak loading on the local distribution facilities.

An important element in the design of the distribution system, as well as in the design of distribution rates, is the concept of diversity. Diversity means that the different characteristics of different customers result in a variety of electric loads on the system, where individual customer peak demands occur at different times. Diversity characteristics of distribution service can be evaluated at the transformer level, the feeder level, the substation level, and across the system. The greatest diversity exists across the system, as individual customer peak demands occur throughout the day, and are less likely to be coincident to the system's peak.

Because load diversity decreases as you move deeper into the distribution system (i.e., closer to the customer), the need for distribution facilities designed to serve the peak load of individual customers increases with proximity to that load. Furthermore, because customer on-site generation is not generally widespread, there is a lack of diversity resulting from such generation at the local distribution level, and customer on-site generation cannot be relied upon in designing the distribution facilities needed to serve local loads. In other words, distribution facilities near load – local facilities – must be built and operated to assure reliable service to connected customers under their individual peak load conditions, without regard to the presence of local on-site generation.

As one moves further "upstream" in the electric system, however, greater diversity exists in both generation and load. As a result, these upstream facilities are not designed to serve all the individual non-coincident peak load connected to the system, nor are they designed assuming that all of the interconnected generation will be out of service at the same time. The transmission system is the best example of these upstream, or "shared," facilities. These shared facilities are designed assuming the greater diversity that exists on the transmission system.

Because the costs of the local distribution system needed to serve an on-site generating customer taking firm back-up do not differ from the costs of serving a similarly sized all-requirements customer, fairness demands that each customer contribute equitably to support the distribution system that serves them. If firm, instantaneous standby customers did not support their share of the distribution system investment, and those costs had to be recovered from other, non-generating customers, the rates for non-generating customers would *increase* as the result of the decision of some customers to install on-site generation, even though the non-generating customers are not using or relying on the system any more than they did previously. In that case, the standby customer would be receiving the utility's commitment to backup the customer's generation for free, subsidized by other customers. The NSTAR Electric proposal appears designed to equitably allocate the costs of the distribution system among generating and non-generating customers and therefore seems reasonable.

Q. What about the other elements of NSTAR Electric's proposed rate design?

A. As discussed above, NSTAR Electric's proposed rate design distinguishes between local facilities (i.e., distribution) and shared facilities (i.e., transmission). Under the proposed rate, an on-site generating customer on the firm standby rate would only be assessed transmission charges to the extent it took supplemental service. Although the costs of the existing transmission system are not necessarily reduced by a customer's decision to self-generate, because of the greater diversity of load and generation at the transmission level, and the fact that transmission charges in New England generally are assessed on the basis of contribution to the system coincident peak, NSTAR Electric's proposal to assess transmission charges to standby customers only on an as-delivered basis is not unreasonable.

The standby rate proposed by NSTAR Electric also proposes that charges for transition, DSM, and renewables should be based only on the actual kWh deliveries. Customers that generate their own on-site power would also obviously avoid paying for the power they displace, as well as any reconciliation factor based on kWh deliveries. Thus, to the extent an NSTAR Electric customer is receiving standby service, it would avoid paying any charges for transmission, transition, DSM, renewables, power supply, and related per kWh reconciliation factors when it is generating, and would pay only an amount related to the distribution facilities necessary to provide firm, instantaneous back-up service. Based on my understanding of the proposal, I believe NSTAR Electric's proposed standby rate reflects a reasonable rate design that assures on-site generating customers pay an appropriate share of distribution system costs.

2. Should Distribution Companies Recover Their Costs Through Fixed or Variable Charges?

Q. Please discuss the Company's position with respect to NSTAR Electric's proposal to recover standby service costs on the basis of fixed contract demand charges.

A. In his testimony, Mr. LaMontagne accurately describes the differing nature of fixed and variable costs on the electric system. Fixed costs generally are costs that are unavoidable, and do not vary with short-term increases or decreases in customer usage. Examples of such fixed costs are distribution lines and transformers. Variable costs are those that do vary with short-term consumption. Examples include the power purchases, fuel, etc.

In theory, utility rates should be designed to recover fixed costs on the basis of fixed charges, and variable costs on the basis of variable charges. However, traditional utility ratemaking often deviates from pure theory in order to address other policy or regulatory considerations. For example, a regulatory policy that is designed to encourage conservation may provide for a greater portion of a utility's fixed costs to be recovered on the basis of variable charges. Conversely, a policy that favors a stable utility revenue stream regardless of customer consumption might recover a greater portion of costs through fixed charges.

The NSTAR Electric proposal is based on recovering the distribution investment through a demand (KW, rather than kWh) charge, and establishing the amount charged for standby service on a fixed contract demand. As I understand the proposal, to the extent the customer's on-site generating facility goes out of service, the measured supplemental service demand is adjusted by the amount of the contract demand (to assure that demand is not "double counted" at the facility). Because the costs of providing firm standby distribution service do not vary significantly based on usage, establishing a fixed charge to recover the costs of the distribution system that is standing by to serve the customer load would be reasonable. However, as in all cases, competing considerations of simplicity, fairness, rate gradualism (i.e., avoidance of rate shock), etc., need to be considered.

3. Should Standby Rates Reflect Embedded and/or Incremental Costs?

Q. Please discuss the Company's position with respect to whether standby service rates should reflect embedded costs and/or incremental costs.

A. As discussed above, to the extent a customer requests firm standby service from the distribution system, that customer places essentially the same obligations on the distribution utility as a similarly sized non-generating customer does. Therefore, a firm standby customer should pay for the embedded costs of the system that is used to provide that firm standby service. Similarly, to the extent that the installation of an on-site generator results in the incurrence of additional costs attributable solely to the firm standby customer, it is appropriate to assess those costs to the customer directly (e.g., charges pursuant to an approved interconnection policy, or through the assessment of a construction advance).

4. <u>Should Distribution Companies Offer Firm or Non-Firm Standby Service?</u>

Q. Should distribution companies offer differing levels of standby service for customers; i.e., firm and non-firm?

A. Absolutely. The basis for charging a firm standby customer a distribution rate that is comparable to the rate that would be paid by a similarly sized non-generating customer is that the firm standby customer imposes similar obligations on the distribution system to those imposed by a non-generating customer. That is, the utility is required to "standby," with the necessary distribution system facilities needed to serve the firm standby customer's peak load at any time, on an instantaneous basis.

If, on the other hand, an on-site generating customer commits not to impose instantaneous back-up service requirements on the system, and is willing to limit its use of the distribution system so that the utility can permanently redeploy the capacity or facilities that previously had served the on-site generating customer in order to serve other customers, it may be appropriate to provide a different level of standby service with a correspondingly lower charge. The level of such a charge would obviously depend on the level of service desired. For example, if the customer wants non-firm back-up service, where the service is available subject to predetermined criteria, there could be a discount from the rate charged for firm, instantaneous back-up. If a customer was willing to do without any firm standby service to backup its on-site generation (e.g., if internal customer wiring prevents the customer's load from being served from the utility system, or if a line recloser is used to prevent the customer from taking more than a pre-agreed level of load from the utility system), it may be appropriate not to assess the customer any standby charge. (In these cases, however, it still would be appropriate to charge the customer for the incremental costs of configuring the system to provide the requested service.)

Mr. LaMontagne's testimony describes one way that non-firm back-up service could be provided (i.e., special contract). However, there likely are other ways in which non-firm or reduced back-up service could be provided. In any case, it is very important that such non-firm service is available for any on-site generating customer that does not want to receive and pay for the full cost of firm, instantaneous standby service.

IV. Mass. Electric's Rate Plan Settlement

Q. Please describe how the Rate Plan Settlement in Docket D.T.E. 99-47 addresses back-up service rates.

A. Under the November 29, 1999 Rate Plan Settlement approved in Docket D.T.E.99-47, Mass. Electric's distribution rates are frozen through February 28, 2005, subject to adjustment for the occurrence of certain exogenous factors. Among the exogenous factors defined in the Rate Plan Settlement is an adjustment for the "New On-Site Generation." *See Rate Plan Settlement*, Section I.C.1.c. The contents of Section I.C.1.c of the Rate Plan Settlement are set forth in Attachment CAG-1 to my testimony.

Q. What does the Rate Plan Settlement provide with respect to back-up service rates for Mass. Electric?

A. Under Section I.C.1.c of the Rate Plan Settlement, Mass. Electric is to track the installation of new on-site generating capacity operational on or after July 1, 1999. Once the aggregate capacity of this new on-site generation exceeds a threshold of 15 MW, Mass. Electric is authorized to file new auxiliary service rates (i.e., back-up rates) after a 120-day consultation period with the signatories to the Rate Plan Settlement. The Rate Plan Settlement also provides that any new back-up rate filed by Mass. Electric "will be designed to recoup the net lost revenues attributable to the subset of customers to which the Auxiliary [i.e., back-up] Service Provisions would apply."

Q. Has Mass. Electric reached the 15 MW threshold for new on-site generation established in the Rate Plan Settlement?

A. Yes. As of March 2004, the 15 MW threshold was reached. However, Mass. Electric has not yet initiated the process of consulting with the Rate Plan Settlement signatories on the development of a new back-up service rate, nor has it proposed such a rate to date.

V. <u>Additional Comments</u>

Q. Do you have any other comments relative to standby service?

A. Yes. A number of parties have argued that benefits conferred by the presence of distributed generation (e.g., potential investment deferral, local voltage support, congestion reduction) should somehow be reflected in the rates charged for standby service. However, as Mass. Electric has commented previously in other dockets before the Department, the benefits, if any, that may be provided by distributed generation would be highly dependent on location and timing, and therefore would be extremely difficult to reflect in any sort of generally applicable rate. Further, the purported benefits that could be provided on the distribution system from distributed generation are dependent on the degree of physical control that the distribution utility has over the on-site generation. Customers with on-site generation operate their systems for their own economic benefit, not at the behest of the utility system. A clear example of this was the power crisis in California in 2002, which was exacerbated by large amounts of distributed generation shutting down due to a dramatic increase in the price of natural gas in that state. Similarly, the recent cold snap in New England January 14-16, 2004, saw many generators making economic decisions to shut down their units at a time when the system demand for electricity was high. For distributed generation to provide real and reliable benefits on the distribution system, the operation of such generation must be subject to the control of the utility.

The aforementioned need for control of distributed generation operations is even more critical given the lack of diversity of on-site generation at the local distribution level. On a distribution system, diversity of generation must be evaluated on a feeder-by-feeder basis. Today, there is no diversity of generation on a feeder-by-feeder basis because there is not enough customer-owned generation installed to date. Without this diversity, or physical control of the customer's generation, the distribution company must plan on the generator not being on-line in order to continue to meet its obligation to provide reliable service to all customers. Multiple generators on a single feeder might be capable of providing some diversity on that feeder, but only if the generators on the feeder are critical to the business operation where they reside (i.e., they provide the steam for the major process within the business), and only if the generation systems are designed to ride through distribution system disturbances, or otherwise disconnect the local load. To protect the distribution system as well as of on-site generating units, distributed generation is designed to trip off-line when there is a fault or disturbance on the distribution system (i.e., lightning storms, car accidents, animal contacts, etc.). This causes the load previously served by the on-site generator to be served from the distribution system. If the distribution system was designed to rely on the presence of on-site generation to consistently reduce peak loads, the system could quickly become over-loaded if one or more generators on a feeder tripped off-line from a fault and the on-site load was transferred to the distribution system within a few electrical cycles. Only generation systems designed to either ride-through these types of event, or result in the on-site load tripping off-line as well could be used in any sort of benefit analysis.

Given the foregoing, I do not believe that it is feasible at this time to incorporate any measure of purported benefits produced by distributed generation in a generally applicable standby rate.

VI. Conclusion

Q. Does this conclude your testimony?

A. Yes, it does.

Exhibit CAG-1

<u>Section I.C.1.c of November 29, 1999 Rate Plan Settlement, Docket D.T.E. 99-47</u>

Mass. Electric shall adjust its distribution rates as described below by the amount of any net distribution revenues that the Department finds have been lost as the result of the installation of new on-site generating capacity operational after July 1, 1999, to the extent that such new generating capacity exceeds a threshold of 15 megawatts. Mass. Electric shall have the burden of proof in regard to its claim of lost distribution revenue. Mass. Electric agrees that it will not apply any adjustment to its distribution rates unless the threshold in the first sentence is exceeded. In the event that the threshold may be exceeded, Mass. Electric shall propose Auxiliary service provisions in accordance with paragraphs i. through iv. below. The signatories are free to oppose any such provision. The signatories agree that Mass. Electric's auxiliary service rates will be designed to recoup the net lost revenues attributable to the subset of customers to which the Auxiliary Service Provisions would apply. To the extent that revenues recovered under the Auxiliary Service rates authorized by the Department do not fully recover the demonstrated lost revenues, Mass. Electric will be permitted to adjust its distribution rates in each class for any remaining revenues lost within that rate class within the preceding calendar year as a result of new on-site generation only to the extent that this factor, in addition to other Exogenous Factors that may be in effect pursuant to this Section 1.C.1., would allow Mass. Electric's distribution rates to remain below 100% of the Regional Index.

i. Consult with the signatories 120 days prior to filing any change to the Auxiliary Service Rate and work with the signatories and other interested parties to develop a mutually agreeable proposal;

ii. Exclude on-site generating capacity operational prior to July 1, 1999 at the locations of existing G-3 customers or replacement capacity to the same level of megawatts as existing generation at those locations from the charges under such Auxiliary Service Rate and the calculation of the 15 megawatt threshold set forth at the outset of this paragraph;

iii. Exclude PURPA qualified cogenerating facilities operating on a non-dispatchable basis producing thermal energy for industrial processes, or heating and cooling systems at the customer's location and non-dispatchable, non-fossil fuel renewable energy facilities from the charges under such Auxiliary Service Rate, provided, however, that the capacity of such facilities shall be included in the calculation of the 15 megawatt threshold set forth at the outset of this paragraph.

iv. Apply the pricing provisions in the revised Auxiliary Service Rate to all other generation operational on or after July 1, 1999. Costs associated with the 15 MW threshold will be excluded from Mass. Electric's pricing provisions and Mass. Electric will not seek to recover such costs from any of its customers.

The commitments in this paragraph shall continue through the end of the Rate Plan on December 31, 2009, at which time they shall expire. In addition, the signatories agree that Mass. Electric's Auxiliary Service Provisions shall be modified so that customers on Rates G-2 and G-3 installing new on-site generation with nameplate capacity greater than or equal to 50 KW will notify Mass. Electric at least six months prior to installing such new on-site generation. This requirement shall be included in Mass. Electric's Auxiliary Service Provisions as shown in Attachment 6.